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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/980,910

Applicant(s)

WIETZORECK ET AL.

Examiner

Lois Zheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 84-118 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 84-118 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 February 2006 has been entered.

### ***Status of Claims***

2. New claims 84-118 are added in view of the amendment filed 17 February 2006. Therefore, claims 84-118 are currently under examination.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel et al. US 5,976,272(Seidel) in view of Reed US 3,939,014(Reed).

Seidel discloses a no-rinse phosphating metal substrate process with a coating solution comprising:

- 2 – 25 g/l of zinc ions (abstract, col. 2, lines 47-54, lines 58-59)
- 2 – 25 g/l of manganese ions (abstract, col. 2, lines 62-66)
- 50 – 300 g/l of phosphate ions (abstract, col. 2, lines 47-54)

Regarding claim 84, Seidel further teaches that the coating formed is a crystalline phosphate coating(claim 13) and phosphate coating weight of around 0.3 to around 3 g/m<sup>2</sup>(col. 3 lines 59-60). Seidel further teaches that the ratio of the sum of metal ions to phosphate is in the range of 1:5 – 1:6(col. 4, lines 23-26, lines 37-42, lines 50-55).

However, Seidel fails to teach the claimed amount of zinc ions being 26 – 60 g/l.

Reed teaches an aqueous zinc phosphating solution for coating of steel for deforming(title, abstract). The zinc phosphating solution of Reed comprises 5-100g/l of zinc and 10-150g/l of phosphate(col. 4, lines 18-21).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated 5-100g/l of zinc of Reed into the coating solution of Seidel in order to achieve the rapid coating results as taught by Reed(col. 4, lines 13-17).

Regarding claim 110, the coating composition of Seidel in view of Reed comprises amounts of zinc, manganese, phosphate ions that overlap the claimed mounts as recited in instant claim 110. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed Zn, Mn, and Phosphate ion

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ranges from the disclosed Zn, Mn, and Phosphate ion ranges of Seidel in view of Reed would have been obvious to one skilled in the art since Seidel in view of Reed teach the same utilities in their disclosed Zn, Mn, and Phosphate ion ranges. In addition, Seidel further discloses that the ratio of the sum of metal ions to phosphate is in the range of 1:5 – 1:6(col. 4, lines 23-26, lines 37-42, lines 50-55) and Seidel further teaches the phosphate coating weight of around 0.3 to around 3 g/m<sup>2</sup>(col. 3 lines 59-60). Therefore, the coating weight and cation to phosphate ion ratio as taught by Seidel in view of Reed read on the claimed coating weight and cation to phosphate ion ratio.

6. Claims 84, 86, 88-109, 114-115 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel et al. US 5,976,272(Seidel) in view of Reed US 3,939,014(Reed) and further in view of Jo et al. US 5,221,370(Jo).

The teachings of Seidel in view of Reed are discussed in paragraph 5 above. However, Seidel in view of Reed do not explicitly teach the claimed 10-120g/l of hydrogen peroxide in the coating solution.

Jo teaches a phosphate coating composition comprising 0.5-10g/l of hydrogen peroxide as an accelerating agent in order to obtain a film of sufficient quality(col. 3 lines 7-9 and 12-20).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the 0.5-10g/l of hydrogen peroxide as taught by Jo into the coating composition of Seidel in view of Reed in order to obtain a film of sufficient quality as taught by Jo.

Furthermore, the amounts of zinc, manganese ions and hydrogen peroxide in the coating solution of Seidel in view of Reed and Jo overlap the claimed amounts of zinc, manganese ions and hydrogen peroxide (i.e. 26 – 60 g/l of zinc ion and 0.5 – 40 g/l of manganese ion, 10-120g/l of hydrogen peroxide) as recited in instant claim 84. The amount of phosphate ions in the coating solution of Seidel in view of Reed encompasses the claimed phosphate amount of 50 – 300 g/l as recited in claim 84. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed Zn, Mn, Phosphate ions and hydrogen peroxide concentration ranges from the disclosed Zn, Mn, Phosphate ion and hydrogen peroxide concentration ranges of Seidel in view of Reed and Jo would have been obvious to one skilled in the art since Seidel in view of Reed and Jo teach the same utilities in their disclosed Zn, Mn, Phosphate ions and hydrogen peroxide concentration ranges.

Regarding claim 86, Seidel's phosphating solution further comprises 0.1 – 15 g/l of nickel (col. 3, lines 3-7), which reads on the nickel amount of up to 20 g/L as claimed.

Regarding claim 88, Seidel further discloses that the ratio of the sum of metal ions to phosphate is in the range of 1:5 – 1:6 (col. 4, lines 23-26, lines 37-42, lines 50-55), which reads the claimed cation to phosphate ion ratio range of 1.1 – 1.8 as claimed.

Regarding claim 89, Seidel further discloses that the liquid film formed by Seidel's phosphating solution is in the amount of 2 – 10 ml/m<sup>2</sup> (col. 3, lines 52-53), which reads on the liquid film amount range of 1 – 12 ml/m<sup>2</sup> as claimed.

Regarding claims 90 and 108 of the instant invention, Seidel further teaches the phosphate coating weight of around 0.3 to around 3 g/m<sup>2</sup>(col. 3 lines 59-60), which reads on the claimed layer weight of 0.3 to 3g/m<sup>2</sup> as recited in instant claim 90 and encompasses the claimed layer weight of 0.3-2g/m<sup>2</sup> as recited in instant claim 108. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed layer weight range from the disclosed range of Seidel in view of Reed and Jo would have been obvious to one skilled in the art since Seidel in view of Reed and Jo teach the same utilities in their disclosed layer weight range.

Regarding claim 91, Seidel further teaches that the phosphate coating can be applied by various methods such as spraying and squeezing as claimed(col. 3 line 64 – col. 4 line 17).

Regarding claim 92 and 117, Seidel further teaches that the substrate surface is heated to 50 – 120°C (col. 5 lines 18-20), which reads on the claimed temperature of 20-120°C.

Regarding claim 93, since Seidel in view of Reed disclose a phosphate coating composition in g/l that overlaps the coating composition of claimed invention, therefore, the coating composition in wt% as taught by Seidel in view of Reed would have inherently overlapped the claimed coating composition in wt%. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating composition ranges in wt% from the disclosed ranges of Seidel in view of Reed and Jo would have been obvious to one skilled in the art since Seidel in view of Reed and Jo teach the same utilities in their disclosed coating composition ranges.

Regarding claim 94, even though Seidel in view of Reed do not explicitly teach the claimed second application of the phosphate coating layer, one of ordinary skill in the art would have found the claimed second phosphate coating layer obvious since it is well known in the art to apply additional phosphate coating layers in order to enhance the corrosion resistance. Furthermore, Seidel's phosphate coating solution, comprising 2-25 g/l of Zn, 2-25 g/l of Mn, 0.1-15g/l of Ni, and 50-300g/l of phosphate ions(i.e. equivalent to 30.77-184.66 g/l of  $P_2O_5$ ), overlaps the concentrations of the claimed second coating solution. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating composition ranges from the disclosed ranges of Seidel in view of Reed and Jo would have been obvious to one skilled in the art since Seidel in view of Reed and Jo teach the same utilities in their disclosed coating composition ranges.

Regarding claim 95, Seidel further teaches that prior to the phosphate coating step the substrate can be treated with an aqueous solution of titanium phosphates for activation(col. 5 line 63 – col. 6 line 4).

Regarding claim 96, Seidel further discloses the use of 3-200 mg/l of copper ions in the phosphate coating solution, which overlaps the claimed at least 0.3 mg/l of copper ions in the first phosphating solution and 0.1 to 50mg/l of copper ions in the second phosphating solution. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating copper ion concentration range from the disclosed copper ion concentration range of Seidel in view of Reed and Jo would have



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been obvious to one skilled in the art since Seidel in view of Reed and Jo teach the same utilities in their disclosed copper ion concentration range.

Regarding claim 97, Seidel further teaches that the ratio of free acid to total acid is in the range of 1:4 – 1:20(i.e 0.05-0.25), which reads on the claimed range of 0.03-0.6.

Regarding claims 98-99, Seidel further teaches the use of hydrogen peroxide, nitrobenzene sulfonic acid and/or hydroxylamine as accelerator(col. 4 line 64 – col. 5 line15), which reads on the claimed catalyst and the claimed peroxide admixture.

Regarding claim 100, Seidel further teaches the use of hydroxycarboxylic acid such as lactic acid, citric acid and tartaric acid(col. 3 lines 17-21) in the phosphate coating solution as claimed.

Regarding claim 101, Seidel further teaches the addition of fluoro complexes of boron, silicon, titanium or zirconium(col. 3 lines 9-12) in the phosphate coating solution, which reads on the instantly claimed boron, silicon, titanium, zirconium and fluoride ions.

Regarding claim 102, Seidel further teaches that the temperature of the coating solution is in the range of 15 to 80°C(col. 3 lines 42-43), which reads on the coating temperature range of 10-80°C as claimed.

Regarding claim 103, even though Seidel in view of Reed and Jo do not explicitly teach that the passivating coating solution is applied to a phosphate layer as claimed, one of ordinary skill in the art would have found the claimed passivating coating solution applied to a phosphate coating layer obvious since it is well known in the art that

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multiple phosphate layers(i.e. passivating layers) can be applied to further enhance the corrosion resistance.

Regarding claims 104-105, Seidel further teaches the phosphate coating impregnated with oil, which acts as lubricant to reduce the friction between the cold forming mechanical tool and the workpiece(col. 2 lines 23-26). Furthermore, the examiner does not find claim 72 bearing patentable weight since the oil coating or lubricant coating is not required to be present.

Regarding claim 106, Seidel further teaches that the phosphate coating is used to prepare the substrate for painting(col. 2 lines 17-18), which meets the instant claim limitations.

Regarding claim 107, Seidel further teaches that phosphate coating is applied to metal parts prior to subjecting the metal parts to cold mechanical forming(col. 2 lines 20-24).

Regarding claim 109, Seidel further teaches the addition of free or complex form fluoride in the amount of 0.01 – 5 g/l(col. 3 lines 9-14).

Regarding instant claim 114, the 2 – 25 g/l of manganese ions in the coating composition of Seidel in view of Reed and Jo reads on the claimed manganese concentration of 5-40g/l.

Regarding claim 115, the instant claim is rejected for the same reasons as stated in the rejection of claim 84, 88 and 93-94 above.

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7. Claims 85, 87 and 111-113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel in view of Reed and Jo, and further in view of Cuyler et al. US 6,743,302(Cuyler).

The teachings of Seidel in view of Reed and Jo are discussed in paragraph 6 above. However, Seidel in view of Reed and Jo do not explicitly teach the claimed polymer in the coating solution.

Cuyler teaches a dry-in-place zinc phosphating composition for coating a metal substrate(titile, abstract), wherein the coating composition comprises 53 – 400 g/l of phosphate ions, zinc to phosphate ion ratio of 0.003:1.00 – 0.10:1.00 (col. 5, lines 16-31), which is equivalent to 0.159 – 40 g/l of zinc ions, and manganese to phosphate ion ratio of 0.01:1.00 – 0.7:1.00 (col. 5, lines 32-54), which is equivalent to 0.53 – 280 g/l of manganese ions. Cuyler also teaches the addition of polymer to the zinc phosphate coating solution in the polymer to phosphate ion ratio amount of 0.0005:1.00 – 5:1.00 (col. 9, lines 37-54), which is equivalent to 0.0265 – 2000 g/l.

Regarding claim 85, it would have been obvious to have incorporated the 0.0265 – 2000 g/l of polymer as taught by Cuyler into the coating composition of Seidel in view of Reed and Jo in order to promote adhesion as taught by Cuyler(col. 8 lines 18-19).

Regarding claim 87, the instant claim is rejected for the same reasons as stated in the rejection of 85 above. In addition, the phrase “in particular of N-containing heterocyclic compounds, preferably of vinyl pyrrolidones” bears no patentable weight since it is merely an example of a polymer.

Regarding claim 111, the instant claim is most rejected for the same reasons as stated in the rejection of claims 84 and 88 above. In addition, the polymer concentration range as taught by Seidel in view of Reed, Jo and Cuyler overlaps claimed polymer amount of 0.5-50g/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed polymer concentration range from the disclosed range of Seidel in view of Reed, Jo and Cuyler would have been obvious to one skilled in the art since Seidel in view of Reed, Jo and Cuyler teaches the same utilities in its' disclosed polymer concentration range.

Regarding claim 112, the instant claim is rejected for the same reasons as stated in the rejection of claim 90 above.

Regarding claim 113, the instant claim is rejected for the same reasons as stated in the rejection of claim 114 above.

8. Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel in view of Reed and Jo, and further in view of Jenkins US 6,206,981 B1(Jenkins).

The teachings of Seidel in view of Reed and Jo are discussed in paragraph 6 above. However, Seidel in view of Reed and Jo do not explicitly teach the claimed p-nitrotoluene sulphonic acid in the coating solution.

Jenkins teaches the addition of p-nitrotoluene sulfonic acid in a coating composition to treat metal surfaces(col. 2 lines 26-33).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated p-nitrotoluene sulphonic acid as taught by Jenkins into the coating solution of Seidel in view of Reed and Jo in order to promote adhesion as taught by Jenkins.

9. Claim 110 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cuyler et al. US 6,743,302(Cuyler).

Cuyler teaches a dry-in-place zinc phosphating composition for coating a metal substrate(titile, abstract). The zinc phosphating composition of Cuyler comprises:

- 53 – 400 g/l of phosphate ions (col. 4, lines 27-61, claims 1(a) and 2(a))
- zinc to phosphate ion ratio of 0.003:1.00 – 0.10:1.00 (col. 5, lines 16-31), which is equivalent to 0.159 – 40 g/l of zinc ions
- manganese to phosphate ion ratio of 0.01:1.00 – 0.7:1.00 (col. 5, lines 32-54), which is equivalent to 0.53 – 280 g/l of manganese ions

Regarding claim 110, the amounts of zinc, manganese and phosphate ions in the coating solution of Cuyler overlap the claimed amounts of zinc, manganese and phosphate ions ranges(i.e. 26 – 60 g/l of zinc ion, 0.5 – 40 g/l of manganese ion, 50 – 300 g/l of phosphate ions). Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed Zn, Mn, phosphate ion concentration ranges from the disclosed Zn, Mn, phosphate ion concentration ranges of Cuyler would have been obvious to one skilled in the art since Cuyler teaches the same utilities in its' disclosed Zn, Mn, phosphate ion concentration ranges.

In addition, Cuyler teaches that microcrystalline coating can be formed when the conversion coating is rinsed off before drying(col. 1 lines 35-43). Therefore, even though Cuyler's phosphating method does not require rinsing of coated surface, it would have been obvious to one of ordinary skill in the art to have added the rinsing step if crystalline coating layer is desired. In addition, Cuyler further teaches the phosphate

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coating weight of 0.05 - 8 g/m<sup>2</sup>(col. 11 lines 20-37), which overlaps the claimed layer weight of 0.3 to 4g/m<sup>2</sup> as recited in instant claim 84. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating weight range from the disclosed range of Cuyler would have been obvious to one skilled in the art since Cuyler teaches the same utilities in its' disclosed coating weight range.

Furthermore, the ratio of the sum of cations to phosphate ions in the solution of Cuyler overlaps the claimed range of 1:1 – 1:8. This conclusion is arrived by comparing the total amount of Zn, Mn and Ni ions to phosphate ions for the coating solution of Cuyler. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed 1.1 – 1.8 cation to phosphate ion ratio range from the disclosed ratio range of Cuyler would have been obvious to one skilled in the art since Cuyler teaches the same utilities in its' disclosed cation to phosphate ion ratio range.

10. Claims 84-96, 98-99, 101-108 and 110-117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cuyler et al. US 6,743,302(Cuyler) in view of Jo.

The teachings of Cuyler are discussed in paragraph 9 above.

However, Cuyler does not explicitly teach the claimed 10-120g/l of hydrogen peroxide in the coating solution.

The teachings of Jo are discussed in paragraph 6 above.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the 0.5-10g/l of hydrogen peroxide as taught by Jo into the coating composition of Seidel in view of Reed in order to obtain a film of sufficient quality as taught by Jo.

Regarding claim 84, the amounts of zinc, manganese and phosphate ions in the coating solution of Cuyler overlap the claimed amounts of zinc, manganese and phosphate ions and the claimed hydrogen peroxide concentration range (i.e. 26 – 60 g/l of zinc ion, 0.5 – 40 g/l of manganese ion, 50 – 300 g/l of phosphate ions and 10-120g/l of hydrogen peroxide). Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed Zn, Mn, phosphate ions and hydrogen peroxide concentration ranges from the disclosed Zn, Mn, phosphate ions and hydrogen peroxide concentration ranges of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed Zn, Mn, phosphate ions and hydrogen peroxide concentration ranges. In addition, Cuyler teaches that microcrystalline coating can be formed when the conversion coating is rinsed off before drying (col. 1 lines 35-43). Therefore, even though Cuyler's phosphating method does not require rinsing of coated surface, it would have been obvious to one of ordinary skill in the art to have added the rinsing step if crystalline coating layer is desired. In addition, Cuyler further teaches the phosphate coating weight of 0.05 - 8 g/m<sup>2</sup> (col. 11 lines 20-37), which overlaps the claimed layer weight of 0.3 to 4g/m<sup>2</sup> as recited in instant claim 84. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating weight range from the disclosed range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed coating weight range.

Regarding claim 85, Cuyler also teaches the addition of polymer to the zinc phosphate coating solution in the polymer to phosphate ion ratio amount of 0.0005:1.00 – 5:1.00 (col. 9, lines 37-54), which is equivalent to 0.0265 – 2000 g/l.

Regarding claim 86, Cuyler teaches that the coating solution further comprises nickel and the nickel to phosphate ion ratio is in the range of 0.003:1.00 – 0.05:1.00 (col. 5, line 55 – col. 6, line 11), which is equivalent to 0.159 – 20g/l, which reads on the claimed nickel amount of up to 20 g/L.

Regarding claim 87, Cuyler further teaches the addition of polymer to the coating solution (abstract, col. 7 line 34 – col. 10 line 27). The phrase “in particular of N-containing heterocyclic compounds, preferably of vinyl pyrrolidones” bears no patentable weight since it is merely an example of a polymer.

Regarding claim 88, the ratio of the sum of cations to phosphate ions in the solution of Cuyler in view of Jo overlaps the claimed range of 1:1 – 1:8. This conclusion is arrived by comparing the total amount of Zn, Mn and Ni ions to phosphate ions for the coating solution of Cuyler. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed 1.1 – 1.8 cation to phosphate ion ratio range from the disclosed ratio range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed cation to phosphate ion ratio range.

Regarding claim 89, the examiner asserts that the amount range of the coating solution of Cuyler would overlap the claimed 1-12 ml/m<sup>2</sup> since the coating solution of Culyer is substantially similar to the coating solution of the claimed invention.



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Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate coating amount from the disclosed phosphate coating amount range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed phosphate coating amount range.

Regarding claims 90 and 108, Cuyler further teaches the phosphate coating weight of  $0.05 - 8 \text{ g/m}^2$  (col. 11 lines 20-37), which overlaps the claimed layer weight of  $0.1$  to  $5 \text{ g/m}^2$  as recited in instant claim 57 and the claimed layer weight of  $0.2$  to  $5 \text{ g/m}^2$  as recited in instant claim 75. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating weight range from the disclosed range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed coating weight range.

Regarding claim 91, Cuyler further teaches that various coating methods such as spraying can be used to apply the phosphate coating solution.

Regarding claim 92, Cuyler further teaches that the phosphate coating can be dried at  $20-230^\circ\text{C}$ , which overlaps the claimed temperature of  $20-120^\circ\text{C}$  as instantly claimed. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed drying temperature range from the disclosed range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed temperature range.

Regarding claim 93, since Cuyler in view of Jo teach a phosphate coating composition in g/l that overlaps the coating composition of claimed invention, therefore,

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the coating composition in wt% as taught by Cuyler in view of Jo would have inherently overlapped the claimed coating composition in wt%. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating composition ranges in wt% from the disclosed ranges of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed coating composition ranges.

Regarding claim 94, Cuyler further teaches that the phosphate conversion coating can be applied again the substrate is being mechanically shaped(col. 11 lines 31-37). Furthermore, the phosphate coating solution of Cuyler in view of Jo, comprising 0.159 – 40 g/l of Zn, 0.53 – 280 g/l of Mn, 0.159 – 20g/l of Ni, and 53 – 400 g/l of phosphate ions(i.e. equivalent to 32.62 - 246.21g/l of  $P_2O_5$ ), overlaps the claimed concentrations of the claimed second coating composition. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating composition ranges from the disclosed ranges of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed coating composition ranges.

Regarding claim 96, Cuyler further teaches the use of copper in the coating solution in the amount of 3-100mg/l(col. 6 line 66 – col. 7 line 2), which overlaps the claimed at least 0.3 mg/l of copper ions in the first phosphating solution and 0.1 to 50mg/l of copper ions in the second phosphating solution. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating copper ion concentration range from the disclosed copper ion concentration range of

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Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utilities in their disclosed copper ion concentration range.

Regarding claims 98 and 117, Cuyler further teaches using hydroxylamine in the coating composition(col. 6 line 37-59).

Regarding claim 99, Cuyler in view of Jo teach the claimed peroxide admixture.

Regarding claim 101, Cuyler further teaches using iron in the coating composition(col. 6 line 14-36).

Regarding claim 102, Cuyler further teaches that the coating solution is applied at 20-30°C(col. 10 line 57-61), which reads on the instantly claimed 10-80°C.

Regarding claim 103, Cuyler further teaches that the additional protective phosphate coating can be applied to phosphated metal surface(col. 1 lines 46-52).

Regarding claims 104-105, Cuyler further teaches that the phosphate coating layer can be used as a carrier for lubricant material, which inherently meets the claim limitation of applying a lubricant to dried phosphate coating layer. Furthermore, the examiner does not find claim 72 bearing patentable weight since the oil coating or lubricant coating is not required to be present.

Regarding claim 106, Cuyler further teaches that phosphate coating enhances the adhesion to subsequently applied paint, which inherently meets the instant claim limitations.

Regarding claim 107, Cuyler further teaches the substrate is shaped mechanically after coated with a phosphate coating(col. 11 lines 31-38).

Regarding claim 111, the instant claim is mostly rejected for the same reasons as stated in the rejection of claims 84 and 110 above. In addition, Cuyler also teaches the addition of polymer to the zinc phosphate coating solution in the polymer to phosphate ion ratio amount of 0.0005:1.00 – 5:1.00 (col. 9, lines 37-54), which is equivalent to 0.0265 – 2000 g/l, which overlaps the claimed polymer concentration of 0.5-50g/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed polymer concentration range from the disclosed polymer concentration range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utility in their disclosed polymer concentration range.

Regarding claim 112, the instant claim is rejected for the same reason as stated in the rejection of instant claim 90.

Regarding claims 113-114, the 0.53 – 280 g/l of manganese ions in the coating composition of Cuyler overlaps the claimed manganese concentration of 5-40g/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed manganese ion range from the disclosed manganese range of Cuyler in view of Jo would have been obvious to one skilled in the art since Cuyler in view of Jo teach the same utility in their disclosed manganese concentration range.

Regarding claim 115, the instant claim is rejected for the same reasons as stated in the rejection of claim 84, 88 and 93-94 above.

Regarding claim 116, the instant claim is rejected for the same reasons as stated in the rejection of claim 111, 90 and 93-94 above.

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11. Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cuyler in view of Jo, and further in view of Jenkins US 6,206,981 B1(Jenkins).

The teachings of Cuyler in view of Jo are discussed in paragraph 10 above. However, Cuyler in view of Jo do not explicitly teach the claimed p-nitrotoluene sulphonic acid in the coating solution.

Jenkins teaches the addition of p-nitrotoluene sulfonic acid in a coating composition to treat metal surfaces(col. 2 lines 26-33).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated p-nitrotoluene sulphonic acid as taught by Jenkins into the coating solution of Cuyler in view of Jo in order to promote adhesion as taught by Jenkins.

### ***Response to Arguments***

12. Applicant's arguments filed 17 February 2006 have been fully considered but they are not persuasive.

13. The Declaration under 37 CFR 1.132 filed 17 February 2006 is insufficient to overcome the rejection based upon Cuyler as set forth in the last Office action because: The Declaration fails to demonstrate criticality of the claimed total cations to  $P_2O_5$  ratio.

In the declaration, applicant concurs that the total cations to  $P_2O_5$  ratio as taught by Cuyler overlaps the claimed total cations to  $P_2O_5$  ratio of 1:1.2-1:1.7. However, applicant argues that the claimed range is not preferred by Cuyler since the examples of Cuyler show much smaller total cations to  $P_2O_5$  ratios.

The examiner does not find applicant's argument persuasive since examples are merely embodiments of an invention and they do not limit the scope of the invention.

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Therefore, the examples of Cuyler do not limit the broader range of total cations to  $P_2O_5$  ratio disclosed by Cuyler.

Therefore, applicant has not provided sufficient factual evidence to demonstrate the criticality of the claimed total cations to  $P_2O_5$  ratio.

14. Applicant's arguments with respect to Seidel in view of Reed have been fully considered but they are not persuasive.

In the remarks, applicant's argument based on the coating speed and coating time is not persuasive since coating speed and coating time are not claimed limitations.

Applicant further argues that the prior art references and the instant invention do not achieve the same objectives.

The examiner does not find applicant's arguments persuasive since process objectives merely represent the intended uses of the coating processes taught by the prior art references and the instant invention, therefore, do not lend patentability to the instant claims.

Applicant's further arguments of Reed containing no manganese in the coating solution is not persuasive since applicant's arguments attack the Reed reference only while the rejection ground is based on the combined teachings of Seidel in view of Reed and Jo. It is well settled that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., Inc., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). See MPEP 2145 (IV).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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